

Annual
Report
1979-80

California Academy of Sciences

CALIFORNIA ACADEMY OF SCIENCES

GOLDEN GATE PARK, SAN FRANCISCO, CALIFORNIA 94118

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(as of June 30, 1980)

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On the front cover:

Dr. Sylvia Earle, Curator of Phycology, on the seafloor off Oahu, Hawaii. On September 19, 1979 Dr. Earle made the deepest solo exploratory dive in the open sea—1250 feet. Dr. Earle and photographer Al Giddings are co-authors of the National Geographic Society's book "Exploring the Deep Frontier." (Photo by Al Giddings/Sea Films, Inc.) © 1980 National Geographic Society.



A MESSAGE FROM THE CHAIRMAN

It is my privilege to introduce this report covering the Academy's year ended June 30, 1980. Our institution has had a fine year under the leadership of its able director, Dr. George E. Lindsay, and his outstanding staff.

September 1979 saw the opening at the Academy of the Folger Shakespeare Library's exhibit "Shakespeare: the Globe and the World," which attracted thousands of visitors and was exceptionally well received. More recently, the Academy has presented with great pride the Hopi Kachina exhibition, now leaving us to tour other major American museums; "The Ancestors," an outstanding display of artifacts of the Indians of the Americas; and a number of other presentations, such as the fascinating collection of American Indian Baskets loaned us by Mr. Clay P. Bedford and the Pre-Columbian art exhibit given us by Mr. and Mrs. Victor Bergeron and the Trader Vic Corporation. The Hopi Kachina show deserves special mention because it originated with our museum, and it was our staff's organizational effort (with, however, much help from others) which made it possible.

This was also a year in which we undertook to plan for the future, funds for development of these plans having been provided by trustee William J. Hume. We engaged Dr. J. C. Dickinson, Jr., Director Emeritus of the Florida State Museum, to study how the Academy can best achieve distinction, and his report lays heavy stress on the emphasis given our scientific activities. Concurrently, the management consulting firm of McKinsey & Company, Inc., developed the outlines of a master plan for the Academy's future. Both studies were done under the guidance of a joint trustee-staff committee conscientiously led by trustee Sherman Chickering. At our February 20, 1980 meeting, the board of trustees accepted both the Dickinson and McKinsey reports through resolutions

establishing the Academy's mission as pursuit of distinction both in research and collections and in public education and exhibitions and committing itself to an aggressive program to upgrade materially its excellence in these areas within five years, in the spirit of both reports.

Another major project of the year ended has been the thorough renovation—at a cost of some \$1.5 million—of the Commercial Building, the store and office building owned by the Academy and located at 833 Market Street, San Francisco. This structure stands on the site of the original Academy, destroyed in the fire and earthquake of 1906. It is our expectation that the renovation will enable us substantially to increase our income from the Commercial Building.

Dr. George Lindsay, the Academy's director since 1963, has advised the trustees that he intends to retire in August, 1981. A search committee, headed by trustee Rudolph A. Peterson, is currently seeking a successor, but all of us are aware that no one will be able fully to replace George. He and his wonderful wife, Gerry, have given and continue to give our institution so very much.

Trustee Christian de Guigne, III, died in October, 1979. Chris' guidance and counsel are sorely missed. Eugene A. Shurtleff was elected in January, 1980, to the resulting vacancy, and Gene has already made valuable contributions; we welcome him to our number.

The 1979-80 year saw a further reduction in the level of support by the City and County and also some decline in admissions income. Government budgetary constraints, restrictions on driving in the park on Sunday, and the national recession can be said to be among the causes. The Academy was sufficiently strong to confront and overcome these problems this year, but its resources are not unlimited.

Once again I thank the Academy staff, donors, docents, and volunteers listed elsewhere in this report, our many other supporters, not listed by name, and our more than twelve thousand members. I speak with particular conviction, since this report marks the conclusion of my service as chairman of the trustees. Mr. Rudolph A. Peterson, a trustee since 1969 and vice chairman for a number of years, succeeds to the chairmanship at the October board meeting. Rudy is the retired chairman of Bank of America and brings immense strength to this position.

The 1980-81 year will doubtless see many more challenges and much change. With your continued support, the Academy will emerge from this year a stronger and even more effective institution.

Paul L. Davies, Jr.

Paul L. Davies, Jr.
Chairman, Board of Trustees



REPORT OF THE DIRECTOR

The 1979-80 fiscal year, the subject of this report, was one of unusual activity, stress, and accomplishment. Attendance was 1,507,053, one percent less than the 1,522,700 of the previous year. The City and County of San Francisco again failed to fulfill its Charter obligation to provide the funds necessary for the operation of Steinhart Aquarium. Less than anticipated revenue from admissions and other Academy sources, and escalated cost of operation, particularly in utilities, insurance, and materials, resulted in a substantial operating deficit for the year.

On the positive side the Academy did not experience the catastrophic drop in attendance reported by many museums and other public cultural institutions. An extraordinary series of special exhibitions, described elsewhere, probably provided the attraction which averted a serious decline in attendance. Most important were the ongoing educational and entertainment experiences provided by Steinhart Aquarium, Morrison Planetarium, Wattis Hall of Man, and the permanent museum displays.

The year was one of planning for the future, as reported by Chairman Davies. More than a decade had passed since the most recent formal review by pro-

fessional consultants. Several major objectives, including the construction of Cowell Hall, the Wattis Hall of Man, and the Fish Roundabout had been achieved. The Board of Trustees determined that the Academy's programs and performance should be reexamined and that plans for the future should be restated. The Academy is preparing to meet the challenges of the 1980's.

The California Academy of Sciences is presently sound financially, but its endowment fund foundation must be strengthened. A "Challenge 80" grant of \$400,000 was received from the National Endowment for the Arts, with the condition that it be matched three to one in "new" money within three years ending August 1982. The first year's challenge was met and if an additional \$800,000 can be raised the Academy's endowments will be increased \$1,600,000.

The report year was one of achievement in several areas. On September 19, 1979, Sylvia Earle was carried 1250 feet down to the ocean floor and there worked for three hours in a "JIM" suit, establishing a record for a free dive. The January-February issue of *Pacific Discovery* received a Printing Industries of America Award for excellence. The National Sci-

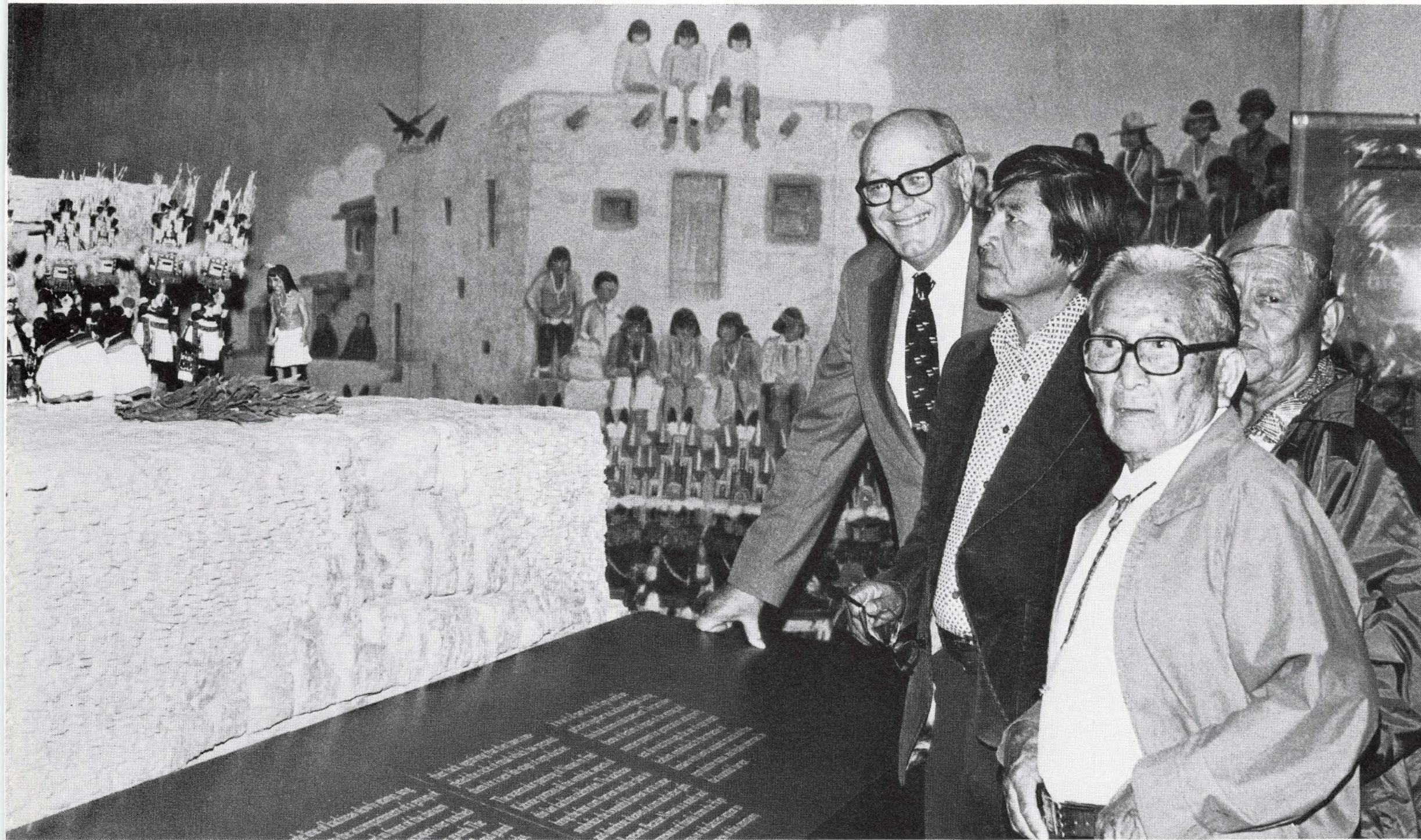
ence Foundation granted \$323,000 for curatorial support of the collections in the departments of botany, entomology, herpetology, ichthyology, and invertebrate zoology, an indication of their stature and value to the scientific community. The Institute of Museum Services again granted \$25,000 for operating support.

The Academy was represented in major conservation efforts around the world. On October 3, 1979, Dr. Angelina Myra Keen was awarded the Fellows' Medal in recognition of her outstanding contributions in the fields of malacology and paleontology, and Margaret Wentworth Owings and Sylvia Earle received the Director's Conservation Awards.

The following is a summary of the activities of the 1979-80 fiscal year.

PUBLIC PROGRAMS

John E. McCosker, who has been in charge of Steinhart Aquarium since September, 1973, accepted the additional responsibility of the new position of Director of Public Programs, California Academy of Sciences, in February, 1980. The Aquarium, Planetarium, and Exhibitions, Education, and Membership Programs are now under his jurisdiction.



Academy Director George Lindsay with Hopi consultants Dr. Emory Sekaquaptewa, anthropologist; Mr. Fred Kaboti, artist; and Mr. William Quotskuyva, kachina carver, at the opening of "Hopi Kachina: Spirit of Life."

STEINHART AQUARIUM

John E. McCosker, Director. Steinhart Aquarium remains the Academy's most popular feature, attracting throngs of visitors and such diverse professional groups as a delegation from the Chinese Academy of Sciences, the Japanese-American Environmental Conference, and the Norwegian Fisheries Council.

Modernized exhibits and first-ever-displayed acquisitions, international research projects, plant improvements, and a "Fish Fair" were major accomplishments. Aquarium Associate Lynn Dunne coordinated the evening benefit with the help of an energetic committee and cooperation of many individuals and organizations. The income from the "Fish Fair" was applied to the Academy's "Challenge 80" match requirement.

The Aquarium is a great educational asset. It displays more species than any other aquarium. Docents lead class tours through it, and the tide pool in the Fish Roundabout is always a center for eager youngsters who can contact living animals, with proper supervision. Other young people volunteer in the Aquarium on weekends and during school vacations.

Aquarium staff members were involved with research projects locally and around the globe. Birgit Winning, John McCosker, and Lynn Dunne joined cinematographers in the frigid St. Lawrence Seaway to study, document, and swim with the world's largest creatures, Blue Whales. Richard Lacer went to the Southwest deserts to get specimens and ideas for new displays. John McCosker joined cinematographer Al Giddings beneath south Australian waters to study Great White Sharks, and also collected Flashlight Fishes in the Gulf of Eilat, Israel, with Brock Metcalf and scientists from Scripps Institution of Oceanography. Research Associate Dr. Michael Lagios and John McCosker edited a provocative volume "The Biology and Physiology of the Living Coelacanth."

Substantial supplemental funding for Steinhart Aquarium was provided by Mrs. Wilson Meyer, Mr. and Mrs. Jeffery Meyer, Mrs. Marriner Eccles, Mr. and Mrs. Maurice Rakowicz, Mrs. Harry Johnston, Mr. Edwin Janss, the Charline H. Breeden Foundation, Pacific Gas and Electric Company, American Airlines, United Airlines, Dow Chemical U.S.A., and many other individuals who donated specimens, assistance, and support.

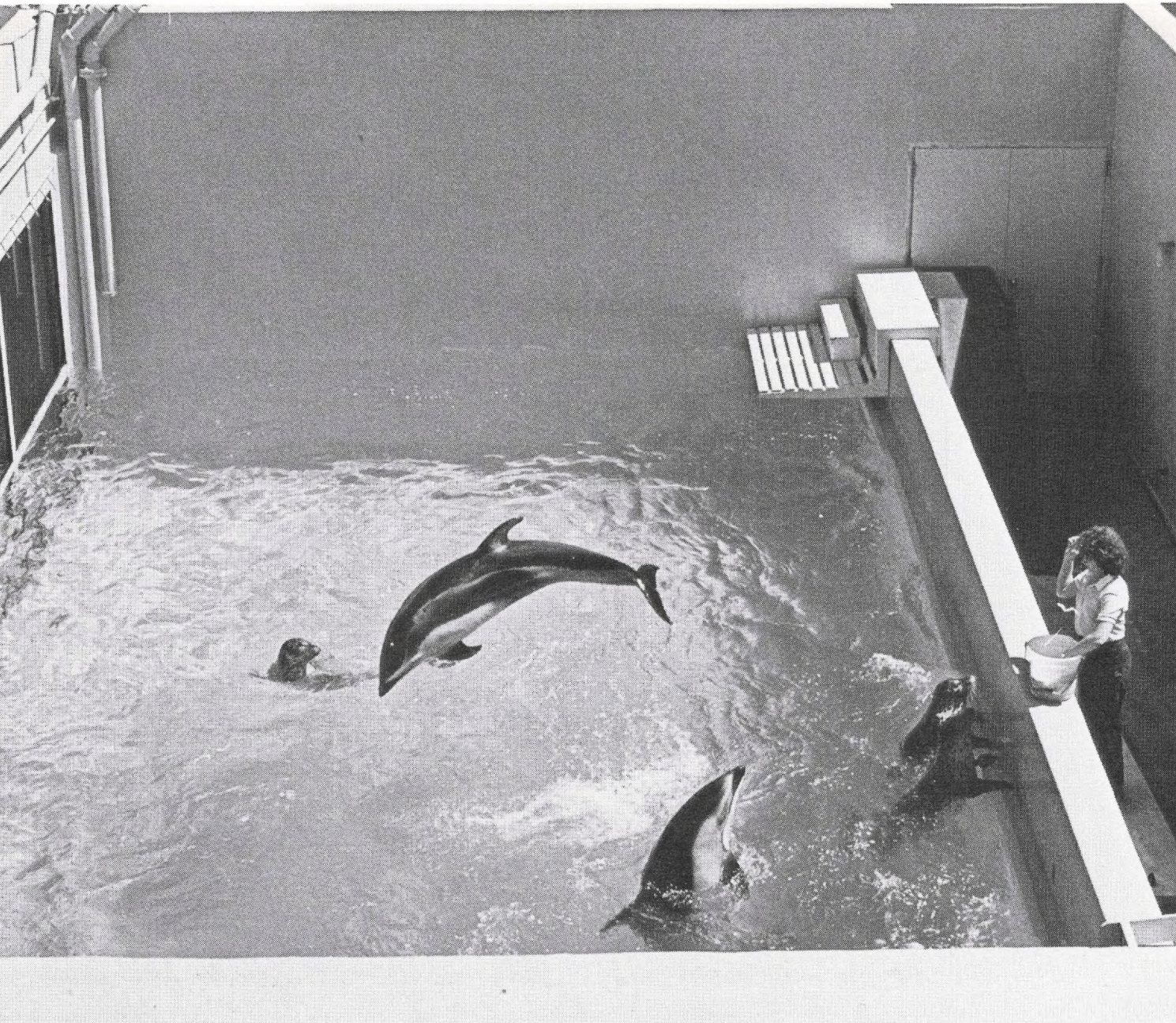
MORRISON PLANETARIUM

Lee W. Simon, Director. A total of 295,193 persons attended programs in Morrison Planetarium. Of these, 139,666 paid admissions to conventional planetarium programs, 22,540 were children and teachers in class groups for whom 122 special student programs were presented, and 109,309 were for Laserium performances. The special program "Exploring the Skies of the Season" was given at 11:00 a.m. Saturdays and Sundays, attracting 7,020 people. Free attendance by Academy members and guests was fifteen percent higher than last year. Planetarium income for the year was \$172,431.

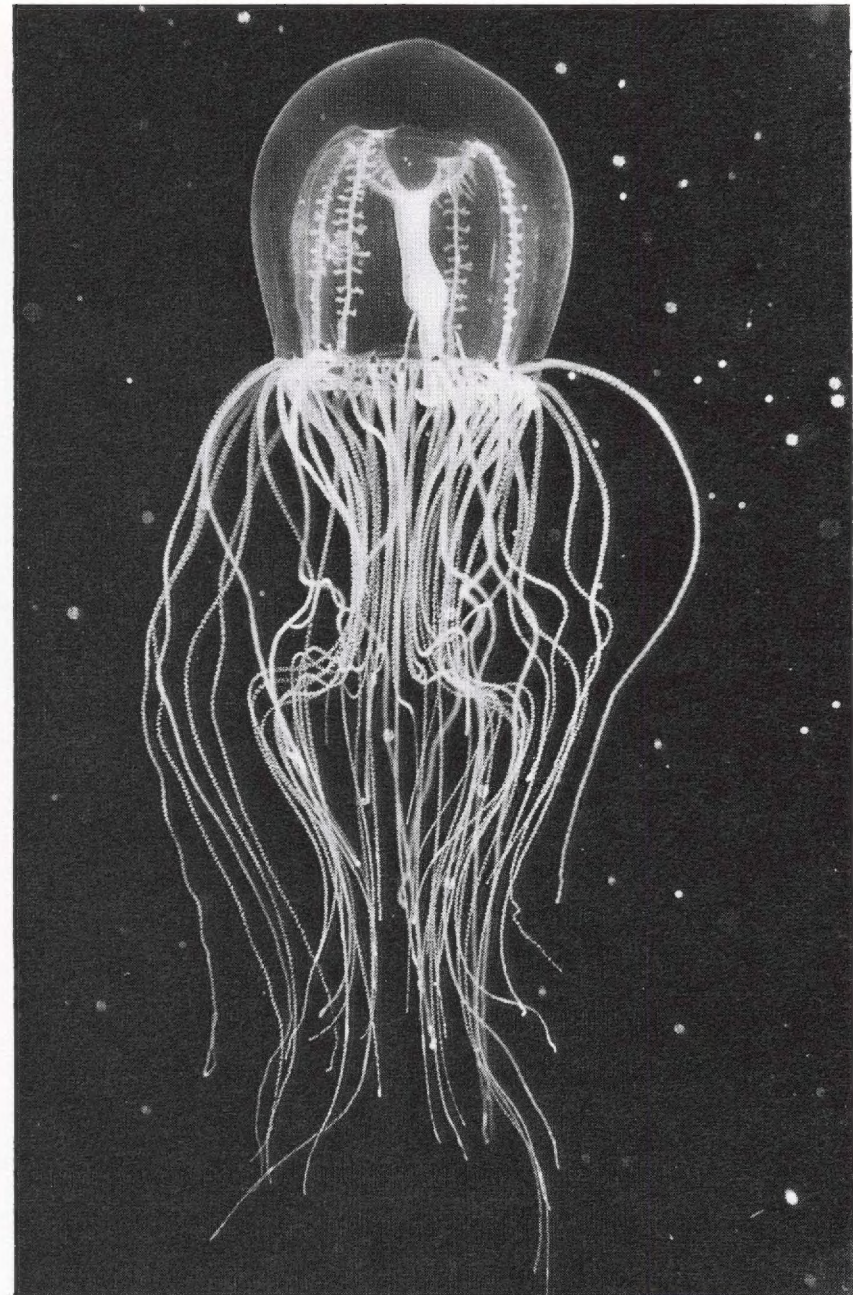
The Planetarium was closed for one week in May during the construction of three projection booths and additional electrical circuits required for a new light show, "Lights Fantastic," which replaced "Laserium's" five and one-half year run in June.

EXHIBITS

Robert W. Bjorkland, Chairman. "Shakespeare, the Globe and the World" was the first of a series of major exhibitions presented during the year. This



Above: Pacific white-sided dolphins and harbor seals are playful attractions of Steinhart Aquarium. Right: Bay jellyfish are often exhibited in the aquarium.



tremendous showing of the treasures of the Folger Shakespeare Library opened its national tour at the Academy October 5, 1979. The first printed folio of Shakespeare's plays, the first editions of many historic publications, royal documents, paintings, and other artifacts of Elizabethan England not before seen on the West Coast were shown. The exhibition was sponsored by the Folger Shakespeare Library, National Endowment for the Humanities, Metropolitan Insurance Company, Exxon Corporation, and the Corporation for Public Broadcasting.

"Woven Treasures: The Clay P. Bedford Basket Collection" opened April 16, 1980, in the handsomely refurbished Wattis Gallery. More than 130 superb examples of baskets show artistic achievement and craftsmanship of the native people of western North America. Mr. Bedford also provided a full color illustrated catalogue of the exhibit.

"The Ancestors: Native Artisans of the Americas" filled the Patricia Price Peterson and Atholl McBean Galleries starting March 19, 1980. Produced by the Museum of the American Indian for a special exhibition in New York in 1977, it was made available to San Francisco viewers through the courtesy of Dr. Roland Force and the Trustees of the Heye Foundation. The entire exhibit, including an eighteen-foot tall Sioux Teepee, will go from the Academy to the People's

Republic of China, the first exhibition of native American art to visit that country.

A permanent exhibit of Pre-Columbian art, from the Trader Vic Corporation, was opened with a festive reception October 17, 1979. It includes a selection of fine pieces from Mexico, Central America, Ecuador, and Peru.

"Hopi Kachina: Spirit of Life" which opened May 21, 1980, to run through Labor Day, crowned the Academy's exhibit efforts. Three years in planning and construction, with substantial financial assistance from the National Endowment for the Humanities, Santa Fe Railway Company, Fireman's Fund Insurance Company Foundation, the Pinewood Foundation, and the Hearst Foundation, this exhibition will also be shown at the Carnegie Museum, American Museum of Natural History, Field Museum, and the National Museum during the next two years. "Hopi Kachina" features the Kachinas given to the Academy by Nathaniel Owings, other materials from the Academy's Anthropology Department collections, and 128 artifacts borrowed from 17 other institutions and individuals. Also produced was a 160-page catalogue of the exhibit artifacts and six articles about Hopi life, a special issue of Pacific Discovery, and an exhibit poster featuring a painting by Dan Namingha.

The Academy is indebted to many Hopi leaders and scholars for their self-

less cooperation in the planning of this exhibit, which was adopted by the Hopi people as a part of their Tricentennial celebration.

There were fifteen temporary exhibits during the year, including "The Great Murals of Baja California," Enrique Hambleton's photographs of the unique cave paintings of Baja California; "Botanical Prints" by Henry Evans; "Nudibranchs: Gaudy Slugs of the Sea" by Edwin Janss, Jr.; "Images of the Southwest" by John Adair; "Bali and Tana Toraja" by Frank Gundry; and Rufus Diamant's "Monumental Stone Carvings of the Ancient Maya."

EDUCATION

Susan Douglas, Coordinator. The Academy's educational functions for its members (as contrasted with the public exhibits) were studied and reorganized. Susan Douglas was appointed Education Coordinator of the department which now includes the California Junior Academy of Sciences, Adult Education and Travel, and the Docent Council.

JUNIOR ACADEMY. Susan Douglas, Supervisor. Kenneth Lucas, who developed the Junior Academy from a minor program into a major department over the past sixteen years, resigned at the end of May in order to manage his own busi-



Reception opening the exhibit "Shakespeare: the Globe and the World" from the Folger Shakespeare Library.

ness. Thousands of young people have benefited from Ken's courses and counsel. Alan Tway continued as Assistant Supervisor and instructor.

The Junior Academy presented 61 courses to 640 members. There were eighteen classes for six-to-eight year old children and their parents. Two week-long field courses were conducted during the summer session. Additional family classes are scheduled for the future.

DISCOVERY ROOM. Karen Herbert, Coordinator. The Discovery Room, now two years old, has been enjoyed by 79,218 visitors. Developed with funds and ideas provided by Janet Nickelsburg, this permanent tactile exhibit is staffed entirely by volunteers. Diane Butler accepted the role of Discovery Room Coordinator at the end of the year, and Karen Herbert is devoting her time to the Junior Academy and managing the tidepool instructors.

DOCENT COUNCIL. Mrs. Ernest Goodner, Chairman, and Diane Butler, Docent Coordinator. The Docent Council entered its second decade of service with 140 docents and trainees to assist Academy visitors in their interpretation of the exhibit halls. Nearly 18,000 persons were given tours and enrichment programs. **SUPERVAN**, the docent outreach vehicle, gave 87 presentations to more than

5,000 persons in classrooms, libraries, and special education centers.

After 24 weeks of training, 38 new docents were graduated in March to assist with the spring schedule of school class tours. Dr. Robert T. Orr again organized the basic course, for which university upper division credit was available. In January twenty senior docents enrolled in the 14-week Aquarium course led by Dr. John McCosker. The docents presented an all-day workshop on Museum Resources for 125 San Francisco elementary school teachers who made reservations for their class groups in the fall.

ADULT EDUCATION AND TRAVEL. Sandra Lelich, Coordinator. Twenty-seven courses which ranged from Astronomy through Zoology were offered for 529 participants. Many included field activities and investigation. There were also symposia entitled "The World of the Hopi" and "Darwin's Galapagos," and special programs on earthquakes and Mt. St. Helens' eruptions.

Living Arts programs, with the support of a matching grant from the National Endowment for the Arts, brought artists, craftsmen, lecturers, and other performers for a variety of cultural presentations. Many were related to special exhibitions, for example Hopi silversmith Michael Kabotie, Kachina carver Hubert Honani, and Hopi-Tewa potter Harriet Young dur-

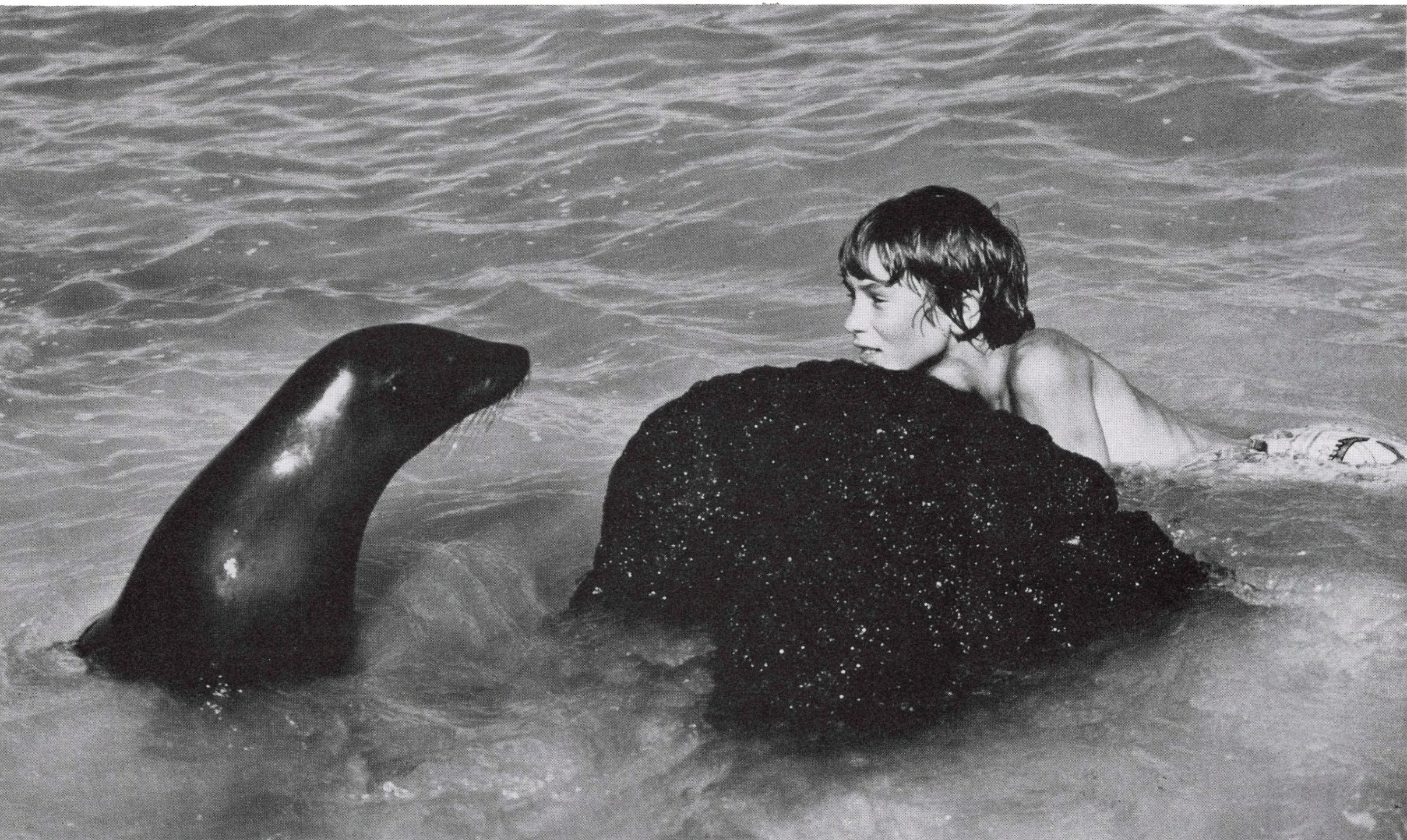
ing the Hopi Kachina show. Many programs were planned especially for children, and all were free of charge.

There were 35 California Study Tours, half-day excursions to four-day trips, and 1,572 people participated. The Pinnacles, Sequoias, Lassen Volcanic National Park, Mendocino mushrooms, San Diego, Yosemite, elephant seals, and bristlecone pines were among the popular travel objectives. The California Study Tours program was particularly effective.

The Members' Travel Program offered longer expeditions to the Pueblo Country, Iceland and Greenland, East Africa, Micronesia, Baja California, Sri Lanka-Nepal-India, the Galapagos Islands, and Peru. There were 250 participants. Seventy-six members, including three generations of three families, were on the Galapagos Cruise. Geraldine Lindsay was Chairman of the Travel Committee, and was assisted by Dr. Robert T. Orr, who led several of the trips, and Sandra Lelich.

DEVELOPMENT

Frances Reed, Administrative Assistant, managed the Development Office efficiently and effectively following the resignation, in March, of Kathleen Bowman who was Development Officer for eight years. A search for a Director of Development was underway at the end



of the report period. The Development Office seeks corporate, foundation, and private financial support essential for the operation of the Academy, and provides staff assistance for Trustee committees concerned with these activities.

Trustee Frank E. Hayward continued as Chairman of the Corporate Support Committee. Corporations, corporate foundations and private foundations, listed on page 20, gave \$252,938 for general operating costs and special projects. We are particularly grateful to Fireman's Fund Insurance Company Foundation, Santa Fe Industries, G.H.C. Meyer Family Foundation, BankAmerica Foundation, Wilson & Geo. Meyer & Co., William Randolph Hearst Foundation, Standard Oil Company of California, Pacific Gas and Electric Company, Chevron U.S.A., Belvedere Scientific Fund, Charles E. Merrill Trust, Pinewood Foundation, Lakeside Foundation, The Bothin Helping Fund, Janss Foundation, Marshall Steel Sr. Foundation, and Charline H. Breeden Foundation.

This year there were ninety "Friends of the Academy," those donors who individually contribute one thousand dollars or more annually. Trustee John A. Sutro continued as Chairman of the "Friends," who are listed on page 21.

Nearly four hundred volunteers, including Docents, provided essential services

for all departments of the Academy. Twenty-five Information Desk volunteers, supervised by volunteer Betsy Arminger, welcomed Academy visitors and during the year recruited more than two thousand new members. Our sincere thanks go to the volunteers, who are listed on pages 18-19.

MEMBERSHIP

Marian Ganapol, Membership Services Coordinator. Mrs. Ernest Lilienthal was Chairman of the Membership Committee. There were 12,612 members on July 1, 1980, a six percent increase over the previous year, and gross income from membership fees was \$205,940, a nine percent increase. The additional support of members, through "Friends of the Academy" and other special contributions, is responsible for the financial health of the institution.

PUBLIC INFORMATION

Pam Wing, Information Officer. The Public Information staff arranged receptions, news conferences, and otherwise publicized the several special exhibitions and many public events of the year. The office is also responsible for the *Academy Newsletter*.

Deidre Kernan joined the staff during

the year, and Lloyd Ullberg provided photographs for publicity releases, *Pacific Discovery*, and the *Annual Report*.

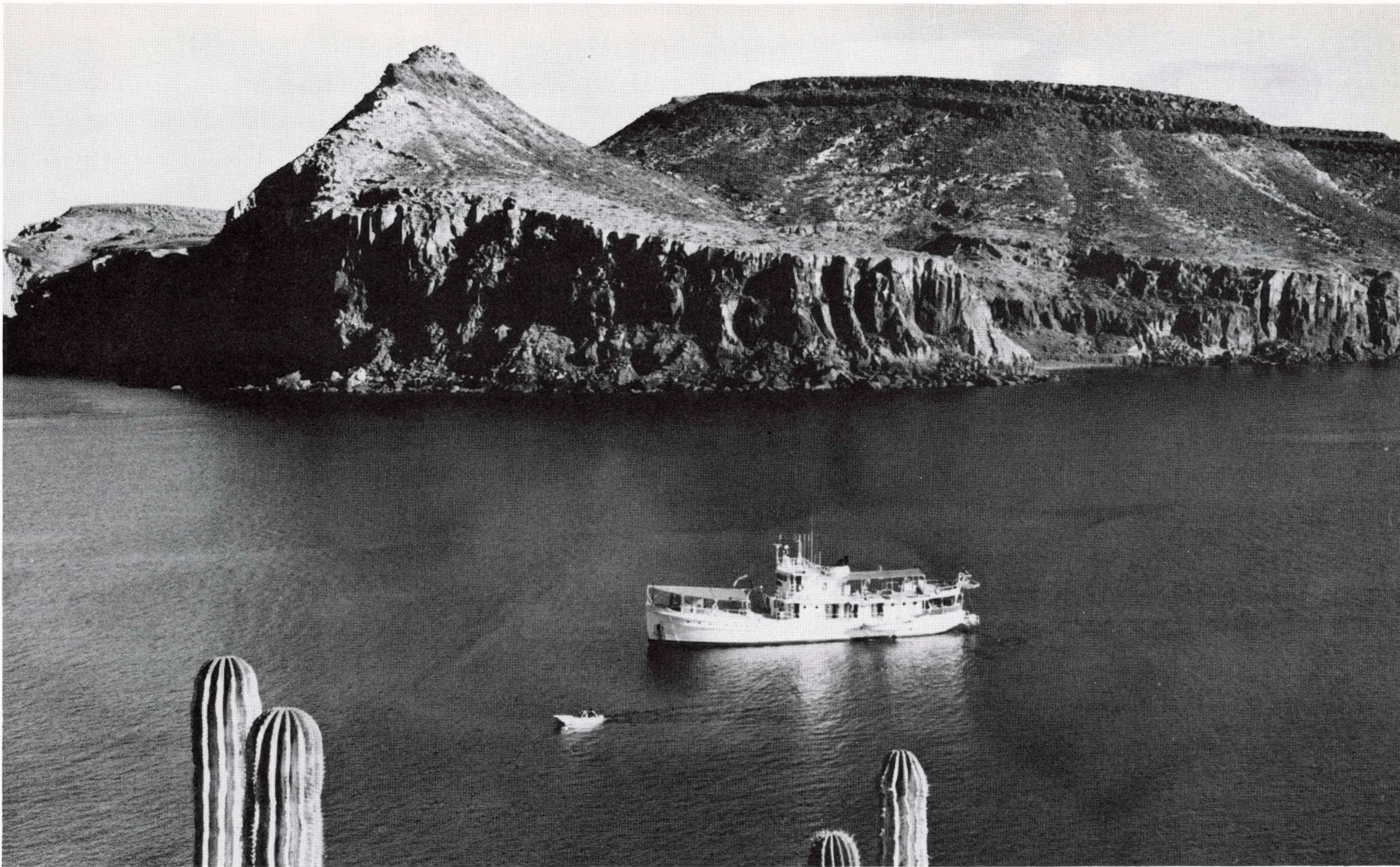
PICTURE COLLECTION

Johan Kooy, Chairman. Sixteen volunteers staff the Picture Collection, which has processed and made available a collection of more than one million photographs and illustrations. The department is an archival resource for records of Academy expeditions and other historical subjects. During the past year 18,000 color transparencies were received in one noteworthy gift, and there were other important contributions, both pictorial and financial, to the department.

PACIFIC DISCOVERY

Bruce Finson, Editor, and Johan Kooy, Art Director. The Academy's bi-monthly magazine published 26 articles on natural history and anthropology. One issue was devoted to the Hopi people, in connection with the opening of the Hopi Kachina exhibit. Average circulation was 15,000.

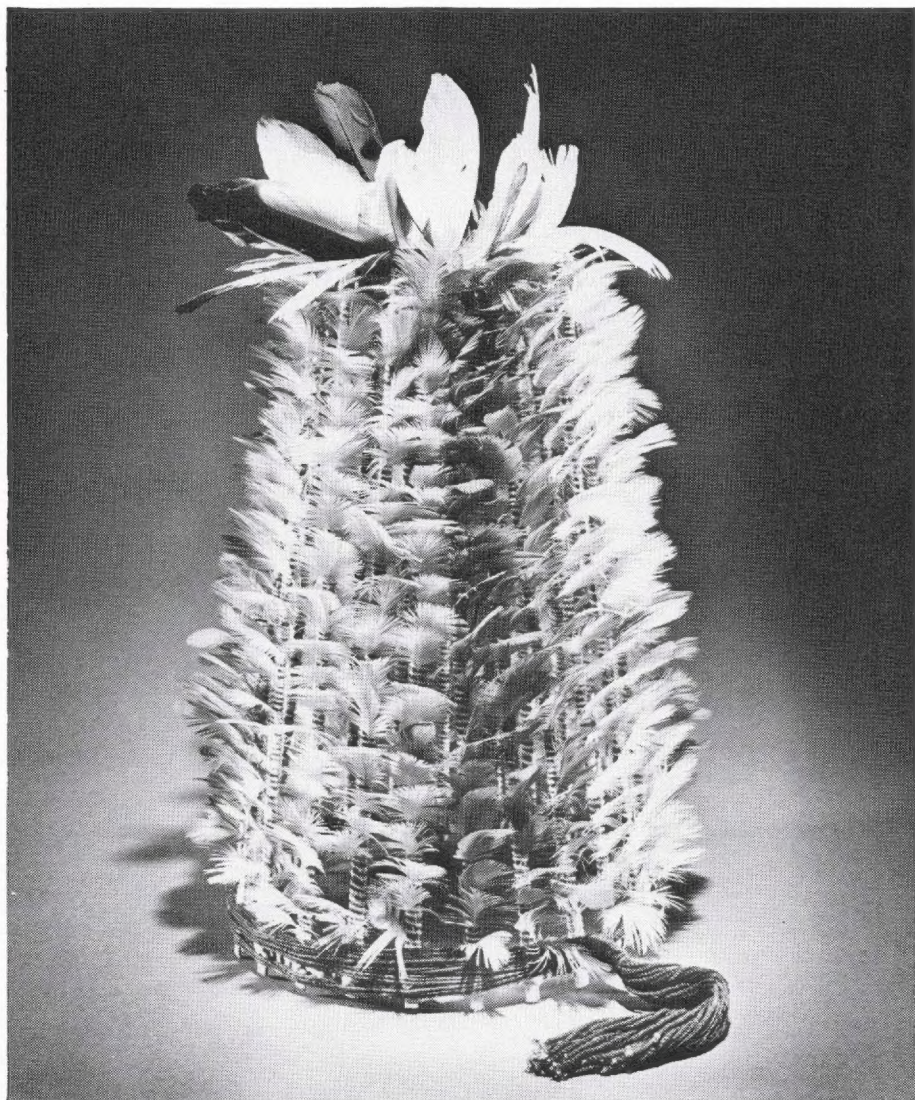
Associate Editors Robert I. Bowman, John E. McCosker, and Robert T. Orr, and Managing Editor George Lindsay assist in the selection of materials to be published.



Upper left: Chris Chickering and a sealion friend during an Academy members' trip to the Galapagos Islands in June, 1980. Above, the *Explorador* carried Academy members through the Sea of Cortez. Right: members' wildflower class at Pepperwood Ranch, the Academy's 3,100-acre nature preserve in Sonoma County.



Below: Feather headdress from South America and carved cedarwood mask from British Columbia were shown in "The Ancestors," an exhibit from the Museum of the American Indian. Bottom: "Hopi Kachina: Spirit of Life" included models of pueblos and Kachina ceremonies—this one the harvest dance. Far right: Kiva at entrance to the Hopi Kachina exhibit.







Above:
Nudibranchs,
photographs of
beautiful sea
slugs by Edwin
Janss, Jr., were
exhibited in
the Atholl McBean
Gallery. Above
right: Dramatic
views of the
Saturn as seen
from Titan,
painted by David
Porazzo, filled
the sky of
Morrison
Planetarium.
Below:
"Shakespeare:
The Globe and
the World"
included several
examples of "first
folio" editions
of Shakespeare's
plays.





OPERATIONS

Steven B. Craig, Operations Manager, is responsible for the instrument, print, and wood shops, and for engineering, security, and custodial maintenance. All departments of the Academy benefit from their services. The contributions of these fine staff members are not often acknowledged. They are, however, absolutely essential for the Academy, and they are appreciated.

INSTRUMENT SHOP. Frank DeOme, Technical Supervisor. Instrument shop technicians designed, fabricated, and installed lighting, audio-visual, projection, and security systems.

WOOD SHOP. Eric Johnson, Supervisor. The wood shop provided exhibit display units, built a sound studio, and completed carpentry projects in many areas of the Academy.

ENGINEERING. James R. Brennan, Chief Engineer. Engineers maintained and improved the complicated water systems of the Aquarium, and the heating and lighting of all buildings. Chief Engineer Brennan and his staff initiated economy measures which largely offset the drastic rate increase of electricity and fuel.

SECURITY. Levelle Anderson, Guard Supervisor. Security personnel saw to the safety of Academy visitors and property.

RESEARCH ACTIVITIES

Dr. William N. Eschmeyer is Director of Research for the California Academy of Sciences. Research in the natural and environmental sciences was the original mission of the Academy and remains its principal obligation today. The research departments house vast collections of scientific specimens—more than ten million—which are the responsibility of twenty-two curators and a support staff of forty-five. Original research is the privilege and obligation of Academy scientists, but the collections are most used by the broad scientific community. Each collection is a resource of national importance.

The National Science Foundation has, during the past twenty-five years, provided funds for specific research projects and for the support of the collections. The latter are called facilities grants. The collections of five departments now benefit from ongoing NSF support, which is justified by the use of those collections. The Academy is grateful for this help and recognition.

ANTHROPOLOGY

Dorothy K. Washburn, Chairman and Assistant Curator. The Anthropology Department was reactivated during the development of the Wattis Hall of Man, and

more than other research departments has been responsible for public exhibitions. "Hopi Kachina: Spirit of Life" was the most ambitious project, and after three years of planning and preparation it opened on May 21, 1980, as is described in the discussion of the Exhibits Department. Patricia Burke was the project coordinator, and Kevin O'Farrell the designer. A 160-page catalogue, edited by Dr. Washburn and coordinated by Leslie Flint, was produced.

The department accessioned 527 artifacts during the year, including 169 Zulu objects collected by Joan Bacharach, and a selection of Australian Aborigine artifacts given by the Australian Government.

BOTANY

Dennis E. Breedlove, Chairman and Curator. Dr. Alva Day was appointed Associate Curator November 1, 1979. On April 1, 1980 the National Science Foundation awarded \$192,000 for a three-year project to aid in the care of the systematic collection of the Botany Department.

Approximately 24,000 specimens were added to the herbarium, which contains about 1,450,000 sheets. The U.S. Forest Service Herbarium, Region Five (California) with 6,000 specimens was given to the Academy in April, 1980. The department loaned 11,180 specimens to 73 professional botanists and graduate students in institutions all over the world.



Dr. Tomio Iwamoto, Associate Curator of Ichthyology, made collections in the Bering Sea while serving as observer aboard the *Yakushi Maru*, a Japanese fisheries survey vessel.

There were 349 visitors to use the Lillian Devendorf Hohfeld Library and the herbarium, including several who were there more than one week. An additional 450 people came to the department seeking botanical information from the staff.

Dr. Breedlove received two National Science Foundation grants for his research, one of \$76,000 to aid in the botanical exploration of the Mexican state of Chiapas and the other of \$15,500 for a field vehicle to facilitate that work. He is also co-investigator in a \$24,000 grant from the National Geographic Society for ethnobotanical investigations concurrent with his other research. He worked in Mexico three months, collecting some 3,000 specimens.

Dr. Almeda continued investigations of the Melastomataceae of Costa Rica and also collected some 2,000 specimens of Melastomataceae and Compositae in Brazil. He received the 1979 Jessie M. Greenman Award from the Missouri Botanical Garden Alumni Association for his monograph of the genus *Monochaetum* in Mexico and Central America.

Mr. John Thomas Howell was awarded the Willdenow Medal by the Berlin Botanic Garden in recognition of his con-

tribution to the post-war rebuilding of the Berlin herbarium.

Dr. Sylvia Earle continued her ongoing field studies of deep water algae in Hawaii and the Bahamas. In September she set a deep diving record in the one-atmosphere diving suit JIM for the deepest open sea solo excursion—1,250 feet for three hours. Dr. Earle heads the Academy's Conservation Committee. She is a Director of the World Wildlife Fund, U.S. and International; the International Union for the Conservation of Nature and Natural Resources; the Environmental Defense Fund; and the Woods Hole Oceanographic Institution.

Dr. Earle was a delegate to the Pacific Science Congress in Khabarovsk, USSR; was the keynote speaker at the 4th Botanical Congress in Pietermaritzburg, South Africa; and lectured in various places in the United States and other countries including Australia, China, Seychelles, Switzerland, Hong Kong, Iceland and England.

ENTOMOLOGY

David H. Kavanaugh, Chairman and Associate Curator. The collection of insects and arachnids contains about

6,805,000 processed specimens, 137,523 of which were accessioned during the year. These were contributions from 172 individuals and institutions, and collections from expeditions. They included 185 primary type specimens.

Loans totaling 72,614 specimens were made to 216 persons in 315 transactions. Recipients were in the United States and 21 foreign countries on six continents. The department entertained 2,093 visitors, including 547 professional entomologists, 461 graduate students, 164 undergraduate or high school students, and 660 others who came as individuals or groups to see the personnel or collections.

The staff entomologists continued their field and laboratory investigations of the groups on which they are working. Dr. Arnaud continued as Treasurer of the Pacific Coast Entomological Society, which is headquartered at the Academy. Dr. Kavanaugh served on the Executive Councils of the Society of Systematic Zoology, The Pacific Coast Entomological Society, and The Coleopterists Society, and was vice-chairman for Section A of the Entomological Society of America. Dr. Ross was a trustee of the American Entomological Institute.



Aquarium Director John McCosker studied great white shark feeding behavior and electrosensitivity from the protection of a shark cage, Dangerous Reef, South Australia. (Photo by Al Giddings)

GEOLOGY

Peter U. Rodda, Chairman and Curator. The Geology Department's research collections include invertebrate fossils, Recent shells, diatoms, and minerals. There are 121,271 lots of fossils and Recent shells, 4,042 lots having been accessioned during the year. These holdings include 57,023 lots from the Stanford University collections which are now combined with the Academy collections. An important addition was the 10,500-specimen shell collections of the late Robert R. Talmadge, donated by his widow, Esther Talmadge.

The diatom collection, cared for by Margaret M. Hanna, contains approximately 52,000 slides and is one of the most important collections in the world.

The mineral collection contains 12,342 specimens; 810 were accessioned during the year. Particularly significant gifts included a 5.3 carat natural Alexandrite gemstone from Dr. Keith McKenzie; 256 mineral specimens, including outstanding display-quality examples of Adamite, Amethyst, and Wulfenite from Mexico, precious Opal from Australia, Gossularite Garnet from Canada, and Apatite from Portugal, given by Arthur Court;

and important collections received from Steven Smale, Steve Pullman, A. L. McGuinness, and the Service Geologique National de France.

The department loaned 971 specimens in 25 transactions, and collections and facilities were used by about 280 visitors during the year.

HERPETOLOGY

Alan E. Leviton, Curator and Chairman. During the report year 2,139 specimens were added to the reptile and amphibian collections, which now have about 224,000 specimens. The North American reptile fauna is well represented and, in keeping with the department's policy, the bulk of the new material was from seventeen foreign countries. Among significant collections received were reptiles and amphibians from Somalia, given by Leo G. Hoevers and Penny M. Johnson, reptiles from Saudi Arabia sent by John Gasperetti, Afghanistan amphibians collected by Steve Reilly, Ecuadorian amphibians obtained by John Simmons, and a large series of reptiles and amphibians from Central America collected by Theodore J. Papenfuss.

Forty-five loan transactions required the handling of 4,600 specimens. In addition to providing reference collections, the department responded to numerous requests for information from the collections, especially from government and private agencies concerned with the preparation of environmental impact statements or the development of land management policies. Twenty-three requests involving 11,105 records were responded to during the year, many coming from such Federal agencies as the Bureau of Land Management project investigators.

Of 230 visitors, 82 came to utilize the department's research facilities, many for periods of several days.

The National Science Foundation responded favorably to an application for support for the collections for the third year, and in June a grant of \$275,000, for a period of five years starting July 15, 1980, was approved.

Dr. Leviton is Executive Director of the Pacific Division, American Association for the Advancement of Science, which has maintained an office at the Academy for 61 years. Robert Drewes is a director of the San Francisco Zoological Society.



Above left: Curator Dennis Breedlove, Chairman of the Botany Department, continued field collecting for his flora of Chiapas, Mexico. Above right: A portion of the Pre-Columbian ceramic collection given to the Academy by the Trader Vic Corporation.

ICHTHYOLOGY

William N. Eschmeyer, Chairman and Curator, and Director of Research for the Academy. Accessions of fishes during the year were 4,225 lots, representing 9,750 specimens, bringing the Academy's holdings to about 180,000 lots and an estimated 1,500,000 specimens. Noteworthy additions were the transfer of collections made by the late A.W.C.T. Herre from the College of Fisheries, University of Washington, and Bering Sea fishes collected by Tomio Iwamoto. The Academy serves as a voucher specimen repository for the studies of the biota of the outer continental shelf of Alaska in preparation for the letting of petroleum leases.

During the year 3,217 specimens in 639 lots were loaned in 67 transactions. Sixty visitors used the facilities for research, many staying for several days or weeks.

The third year of a National Science Foundation support grant was completed and the first year of funding of a new five-year collection support grant was received. The grant provides two technician positions and some supplies.

Dr. Eschmeyer completed the manu-

script of a Peterson field guide for the fishes of the eastern Pacific from Alaska to the Mexican border. Much of his time was devoted to his administrative duties concerning the Academy's research activities. Dr. Iwamoto participated in a one-month cruise to the Bering Sea, sponsored by the National Marine Fisheries Service, continued his studies of macrourid fishes, and edited the Academy's scientific publications.

INVERTEBRATE ZOOLOGY

Welton L. Lee, Chairman and Curator. More than 4,000 wet-preserved specimen lots of new research material were processed during this year, including the remainder of the holdings of the former University of the Pacific Marine Laboratory at Dillon Beach, and voucher specimens from environmental studies, including the San Francisco Shell Fishery Assessment Study. The Dillon Beach collection represented more than twenty years of ecological survey and monitoring in Tomales Bay.

The department collection storage area was enlarged 6,722 cubic feet by the addition of a room which for sixty years housed the Galapagos tortoise collections. The tortoises were removed

to new storage facilities in the Herpetology Department. New office and laboratory facilities were also completed.

During the year 112 lots of more than 300 specimens were loaned to ten institutions, but most of the public service functions were conducted within the department, which attracted about 780 visitors who utilized the collections or library. Environmental agencies, both private and governmental, used the San Francisco Bay Project's bibliographic and taxonomic voucher data base in ever-increasing numbers. No other institution has the scope of data about the invertebrate fauna of the Bay and Delta required for comprehensive studies.

The National Science Foundation provided a three-year facilities support grant which will enable the department to process a large backlog of Southeast Asian invertebrates and complete the final incorporation of the Hopkins Marine Station and the F. B. Steiner collections into those of the Academy.

A six-week study of the coral reef assemblage at Los Frailes, with some collecting stations at Bahia Pulmo and Isla Cerralbo, Baja California Sur, was undertaken with support from Mr. Bruce Markham and associates.



Above left: A young student, Brian Camarena, met Hazel the rabbit and Education Coordinator Susan Douglas in the Discovery Room. Above right: Board Chairman Paul L. Davies, Jr. and Guard Supervisor Levelle Anderson at exhibit opening.

ORNITHOLOGY AND MAMMALOLOGY

Laurence C. Binford, Chairman and Associate Curator. Dr. Binford concentrated on the completion of his study of the birds of Oaxaca, and served as Chairman of the Academy's Scientific Publication Committee, Chairman of the Editorial Board of *Western Birds*, and Secretary of the Cooper Ornithological Society.

The department received 411 birds in 53 accessions and 205 mammals (82 of them marine mammals) in 57 accessions. Robert E. Jones gave 50 marine mammal skulls or skeletons, Dr. Walter C. Brown gave 291 birds and 11 mammal study skins from the Philippines, and Dr. John R. Arnold donated 114 bird and mammal specimens. Rarities included the first Crested Auklet collected in California, from Jeff Narwald, seven Antarctic seabirds from D. David Ainley, and an Arch-beaked Whale from the California Marine Mammal Center. Jacqueline Schonewald and her associates salvaged a Blue and White dolphin and several more common marine mammals from local beaches. A recent survey by the National Fisheries Service placed the Academy's

marine mammal collection as fifth in importance in the nation.

The integration of the Stanford Mammal Collection into the department collection was completed by Dr. John Arnold.

The department made 24 loans of 285 birds and 17 loans of 231 mammals during the year. In addition to department associates, sixty scientists, 71 graduate students, 197 other students, 5 U.S. agency personnel, and 167 other visitors used the department's research materials. As a routine matter the staff identify bird and mammal specimens for United States and California agencies—U.S. Customs, Fish and Wildlife, etc.

SCIENTIFIC PUBLICATIONS

Tomio Iwamoto, Editor. During the year, six issues (224 pages) of the *Proceedings* and two issues (302 pages) of the *Occasional Papers* were published (total 526 pages) at a cost of \$22,083. Part of these publication costs were offset by contributions from the authors (\$1,864) and by the use of special funds (\$11,248). Mailing expenses for the year amounted to \$2,047.

A new series entitled *Flora of Chiapas* was begun with the processing of two

manuscripts: Part 1, "Introduction to the *Flora of Chiapas*" by Dennis E. Breedlove, and Part 2, *Pteridophytes*" by Alan R. Smith. These manuscripts have gone to press, and we expect publication in late 1980. The series will be intermittent with each part published after sufficient manuscripts have been accumulated to give approximately 400 to 500 printed pages. Dennis E. Breedlove, Curator of Botany and initiator of the *Flora*, will be the Editor-Coordinator for the series, and Tomio Iwamoto will be the Managing Editor. The *Flora* will not be sent to our regular exchange and subscription recipients, but will be sold separately.

Our exchanges and subscriptions for the *Proceedings* and *Occasional Papers* now total about 835, of which 618 are exchanges (478 foreign, 140 domestic) and 217 are subscriptions (94 members).

Members of the Scientific Publications Committee during the year were Laurence C. Binford (Chairman), Frank Alameda, Jr., William N. Eschmeyer, Tomio Iwamoto, George E. Lindsay and Lillian J. Dempster (Indexer).

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George E. Lindsay
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1979-1980

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Key to department abbreviations

Ad Administration
An Anthropology
Aq Aquarium
Bo Botany
Do Docents
DR Discovery Room
En Entomology

ET Education/Travel
Ex Exhibitions
Ge Geology
He Herpetology
Ic Ichthyology
ID Information Desk
IS Instrument Shop

IZ Invertebrate Zoology
Li Library
OM Ornithology and Mammalogy
PC Picture Collection
PI Planetarium
SP Scientific Publications
SI Student Intern

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CALIFORNIA ACADEMY OF SCIENCES
STATEMENT OF CURRENT FUNDS — GENERAL OPERATING
REVENUES, EXPENSES, TRANSFERS AND FUND BALANCE
Year ended June 30, 1980 with comparative figures for 1979

Revenues:	1980	1979
Support from the public:		
Corporate contributions	\$ 61,205	68,750
Individuals, trusts and private foundations	85,919	107,048
Membership dues	209,878	196,118
Total support from the public	357,002	371,916
Operating income:		
City and County of San Francisco support of operations (note 8) ..	922,116	954,203
Fees and grants from others	45,435	47,637
Planetarium (including Laserium income of \$111,103 in 1980 and \$101,751 in 1979)	283,534	281,427
Admissions	813,554	857,476
Sales desk royalty	49,510	54,064
Restaurant royalty	92,113	95,974
Other	67,096	82,647
Total operating income	2,273,358	2,373,428
Investment income:		
Net rent from commercial building	238,817	222,591
Interest and dividends	156,368	136,375
Total investment income	395,185	358,966
Total revenues	3,025,545	3,104,310
Budgeted transfers from other funds	435,240	95,908
Total revenues and transfers	3,460,785	3,200,218
Expenses:		
Aquarium and museum	1,523,214	1,372,145
Departmental research and curatorial activity	753,971	679,034
Planetarium	155,397	147,306
Laserium	35,869	33,079
General and administrative	1,042,672	936,297
Employees' pension annuity (note 6)	61,462	59,875
Total expenses	3,572,585	3,227,736
Excess of expenses over revenues and transfers	(111,800)	(27,518)
Fund deficit at beginning of year	(27,854)	(336)
Fund deficit at end of year	\$ (139,654)	(27,854)

See accompanying notes to financial statements.

ACCOUNTANTS' REPORT

The Board of Trustees
California Academy of Sciences:

We have examined the balance sheets of the funds of the California Academy of Sciences as of June 30, 1980 and the related statement of current funds—general operating revenues, expenses, transfers and fund balance and statement of changes in fund balances for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

Under generally accepted accounting principles, expenditures for furniture, fixtures and equipment should be capitalized. The California Academy of Sciences charges such purchases to current expenses, the effect of which is more fully described in note 9.

In our opinion, except for the effect on the financial statements of the failure to capitalize expenditures for furniture, fixtures and equipment as noted in the preceding paragraph, the aforementioned financial statements present fairly the financial position of the California Academy of Sciences at June

30, 1980 and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

The examination referred to above was directed primarily toward formulating an opinion on the financial statements of the California Academy of Sciences taken as a whole. The supplementary data included in Schedules 1 through 3 are presented for supplementary analysis purposes and are not necessary for a fair presentation of the financial position and results of operations and changes in fund balances of the California Academy of Sciences. The supplementary data have been subjected to the auditing procedures applied in the examination of the basic financial statements and, in our opinion, except as noted in the preceding paragraph, are stated fairly in all material respects only when considered in conjunction with the financial statements taken as a whole.

Peat, Marwick, Mitchell & Co.
San Francisco, California
September 3, 1980

CALIFORNIA ACADEMY OF SCIENCES
STATEMENT OF CHANGES IN FUND BALANCE
YEAR ENDED JUNE 30, 1980

	Current funds General operating	Restricted to research	Special purpose funds	Endowment fund	Building fund
Balance (deficit) at beginning of year	\$ (27,854)	\$223,628	\$9,604,385	\$2,751,007	\$(113,166)
Additions:					
Operating income	2,273,358	—	—	—	—
Contributions, grants and appropriations for endowments and special purposes	357,002	741,405	468,377	113,664	—
Investment income	395,185	—	687,702	—	—
Laserium receipts	—	—	12,000	—	—
Gain on sale of securities	—	—	233,971	24,713	—
Other	—	15,382	166,505	28,339	—
Total additions	\$3,025,545	\$756,787	1,568,555	166,716	—
Deductions:					
Operating expenses	\$3,528,680	—	—	—	—
To finance expenditures of research grants	—	415,396	—	—	—
Indirect costs charged to research grants	—	40,171	—	—	—
Amounts expended for furniture, fixtures and equipment (note 9)	29,227	100,543	106,538	—	—
Amounts expended for construction	—	—	10,976	—	—
Amounts expended for professional services	14,678	44,879	85,697	—	—
Commercial building remodeling	—	—	958,100	—	—
Other	—	—	462,583	2,481	—
Total deductions	\$3,572,585	\$600,989	1,623,894	2,481	—
Budgeted transfers between funds	435,240	—	(435,240)	—	—
Balance (deficit) at end of year	\$ (139,654)	\$379,426	\$9,113,806	\$2,915,242	\$(113,166)

See accompanying notes to financial statements.

CALIFORNIA ACADEMY OF SCIENCES
BALANCE SHEETS — JUNE 30, 1980

ASSETS	Current funds General operating	Restricted to research	Special purpose funds	Endowment fund	Building fund
Cash:					
Commercial accounts	\$ 14,269	\$ 57,746	\$ 37,068	\$ 3,953	\$ 1,600
Savings accounts	—	—	729,019	636	—
	14,269	57,746	766,087	4,589	1,600
Receivables:					
Research grants (note 2)	—	360,798	—	—	—
Accrued interest and dividends receivable	21,996	—	41,954	—	—
Other	24,191	67	478	—	—
	46,187	360,865	42,432	—	—
Prepaid expenses	81,535	—	—	—	—
Investments (note 3):					
Commercial property, including a fully depreciated building	—	—	—	608,084	—
Marketable securities	—	—	7,118,023	2,435,680	—
Real property (note 10)	—	—	808,460	—	—
Due from other funds	—	—	504,284	—	—
Total assets	\$ 141,991	\$418,611	\$9,239,286	\$3,048,353	\$ 1,600
LIABILITIES AND FUND BALANCES					
Liabilities:					
Bank overdraft	42,487	—	—	—	—
Accounts payable	64,241	21,930	30,463	—	—
Accrued expenses	6,780	—	—	—	—
Other liabilities	24,003	—	—	—	—
Due to other funds	144,134	17,255	95,017	133,111	114,766
	281,645	39,185	125,480	133,111	114,766
Fund balances:					
Current unrestricted, available for general operations	(139,654)	—	—	—	—
Current restricted, designated by donors for:					
Research grants	—	379,426	—	—	—
Special purposes	—	—	8,528,195	—	—
Irvine anthropology curatorial chair	—	—	585,611	—	—
Endowment fund, under board discretion	—	—	—	2,915,242	—
Building fund	—	—	—	—	(113,166)
Fund balances	(139,654)	379,426	9,113,806	2,915,242	(113,166)
Total liabilities and fund balances	\$ 141,991	\$418,611	\$9,239,286	\$3,048,353	\$ 1,600

See accompanying notes to financial statements.

CALIFORNIA ACADEMY OF SCIENCES
NOTES TO FINANCIAL STATEMENTS

JUNE 30, 1980

1. *Summary of Significant Accounting Policies*

The Academy uses the accrual method of accounting with revenue recorded when earned and expenses recorded when incurred. Government grants are recognized in full when awarded.

Gifts of specimens and collections are not included in the financial statements.

Donated materials and services are not recorded.

The Academy has the following funds:

a. Current General Operating Fund—This fund accounts for resources used in carrying on the routine operations of the Academy in accordance with the limitations of its charter and bylaws. The governing board exercises discretionary control over this fund.

b. Restricted Funds:

1. The current "restricted to research" fund accounts for gifts and grants restricted to research projects. Certain of the general operating fund expenditures are also for research.

2. The special purpose funds account for resources contributed to the Academy for specific purposes other than research projects. The resources are currently available for use, but expendable only for the purposes specified by the donors. Funds donated for plant improvements and the Irvine curatorial chair for anthropology are included in the special purpose fund category in the financial statements. Portions of the funds contributed for the use of various aquarium and museum departments may be designated by the Board of Trustees to general operations to the extent such expenditures are within the purposes specified by donors.

3. The building fund is for resources contributed specifically for the purpose of constructing projects such as the Fish Roundabout and the Wattis Hall of Man.

c. The endowment fund is comprised of unrestricted gifts and bequests. Unrestricted gifts in excess of \$10,000 and life memberships in the amount of \$500 are credited to this fund. The principal amount of the gifts and bequests is not maintained intact in perpetuity. Transfers from the endowment fund and dispositions of its principal are made at the discretion of the governing board. The endowment investment income is credited, as earned, to the current general operating fund.

2. *Research Grants Receivable*

Grants receivable represent amounts pledged to the Academy for certain operations and for the completion of designated projects in future years. The grants are collected when expenditures are made for the designated project. A summary of grants receivable follows:

National Endowment of the Arts,	
Living Art	\$ 9,860
National Science Foundation	241,687
National Endowment of the Humanities ..	42,987
Other	66,264
	<u>\$360,798</u>

3. *Investments*

Investments are recorded at cost, or if acquired by gift, at their fair market value at the date of acquisition. A summary of the current market value of the marketable securities for each fund follows:

	Book value	Market value
Special purpose fund ..	\$7,118,023	\$7,320,043
Endowment fund	<u>\$2,435,680</u>	<u>\$2,388,390</u>

The Academy owns an eleven story, fully depreciated commercial building located in the City of San Francisco. The value as recorded on the balance sheet of the endowment fund represents the cost of the land.

4. *Buildings*

The buildings acquired by the California Academy of Sciences are not reflected in the accompanying balance sheet since under the terms of the Charter of the City and County of San Francisco, no one other than the City may hold title to buildings on City property. As the Academy facilities in Golden Gate Park are acquired, title is transferred to the City and County of San Francisco. The buildings were valued at \$22,837,176 by insurance appraisal in 1980.

5. *Collections, Library and Equipment*

Collections, library and equipment are expensed in the year of acquisition and, as such, are not reflected in the accompanying balance sheet. The Academy staff has estimated the replacement cost of collections, library, and equipment to be in excess of \$15,000,000.

6. *Employees' Pension Annuity*

On January 1, 1964, the Academy adopted a pension annuity plan for all regular full-time staff members under the age of 59 as of that date. On January 1, 1976, this plan was amended to comply with the Employee Retirement Income and Security Act of 1974.

Under the provisions of the plan, the Academy and the employees each fund one-half of the pension cost. The Academy's contributions are based on 5% of the amount of salary subject to Social Security tax and 7½% of the amount of salary above the Social Security tax base. Total pension expense for the year was \$61,462. There is no past service liability, and it is the Academy's policy to fund current pension costs.

7. *Trusts*

The Academy is the ultimate beneficiary under an irrevocable living trust in the amount of \$165,780 (market value \$177,700). The income of the trust is paid to the grantors and the Academy bears the cost of all trust operations. The assets of the trust are not shown in the accompanying financial statements.

The Academy is the trustee and a fifty percent beneficiary under each of three irrevocable unitrust agreements which, together, had a market value at June 30, 1980 of \$1,443,014. Each grantor receives an annual amount equal to six percent of the net fair market value of the assets of the respective unitrust, except for one grantor who receives five percent of the net fair market value of the assets of the unitrust, or current income of the unitrust, whichever is less. These trusts absorb the costs of their operations. The assets of the trusts are not shown in the accompanying financial statements. Distributions under the unitrust agreements, for the fiscal year ended June 30, 1980 totaled \$84,722.

8. *Support from the City and County of San Francisco*

Section 6.404d of the Charter of the City and County of San Francisco states that the City shall provide funds necessary for the maintenance of the Steinhart Aquarium and funds deemed proper for the maintenance of the Academy buildings. During the fiscal year ended June 30, 1980, the Academy received \$922,116 from the City and County of San Francisco for this support.

In addition, the City provided 12 employees under the federally funded Comprehensive Employment and Training Act (C.E.T.A.). These temporary employees supplemented the regular Academy and Civil Service staffs in the following departments: Business Office, Exhibits, and Anthropology. The amount of these Federal funds, amounting to approximately \$85,000, has not been included in the accompanying financial statements; if recorded, these funds would appear in both revenues and expenses, netting to zero.

9. *Furniture, Fixtures and Equipment*

The Academy departs from generally accepted accounting principles in that it expenses such assets as acquired instead of capitalizing them and amortizing the costs over the useful lives thereof. During the year, the Academy acquired furniture, fixtures and equipment costing \$236,308. The Academy also expended \$958,100 for commercial building remodeling which has not been capitalized (note 3).

10. *Real Property*

The Academy holds title to 3,117 acres of ranchland in Sonoma County known as Pepperwood Ranch. The Academy, under terms of the grant deed of title, must preserve the property in its current natural state and can utilize the property for research and educational activities for a period of at least 10 years. Assessed value of the property on the date of the gift was \$808,460.

11. *Income Taxes*

The Academy is qualified as a tax-exempt organization under Section 501(c)(3) of the Internal Revenue Code and is not a private foundation. The Academy is also tax-exempt under the laws of the State of California.

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